

Candidate Forename		Candidate Surname	
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Centre Number						Candidate Number				
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**OXFORD CAMBRIDGE AND RSA EXAMINATIONS
ADVANCED SUBSIDIARY GCE**

F791

GEOLOGY

Global Tectonics

WEDNESDAY 20 MAY 2009: Afternoon

DURATION: 1 hour

SUITABLE FOR VISUALLY IMPAIRED CANDIDATES

Candidates answer on the question paper.

OCR SUPPLIED MATERIALS:

None

OTHER MATERIALS REQUIRED:

Electronic calculator


Ruler (cm/mm)

READ INSTRUCTIONS OVERLEAF

INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the boxes on the first page.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer ALL the questions.
- Write your answer to each question in the space provided, however additional paper may be used if necessary.

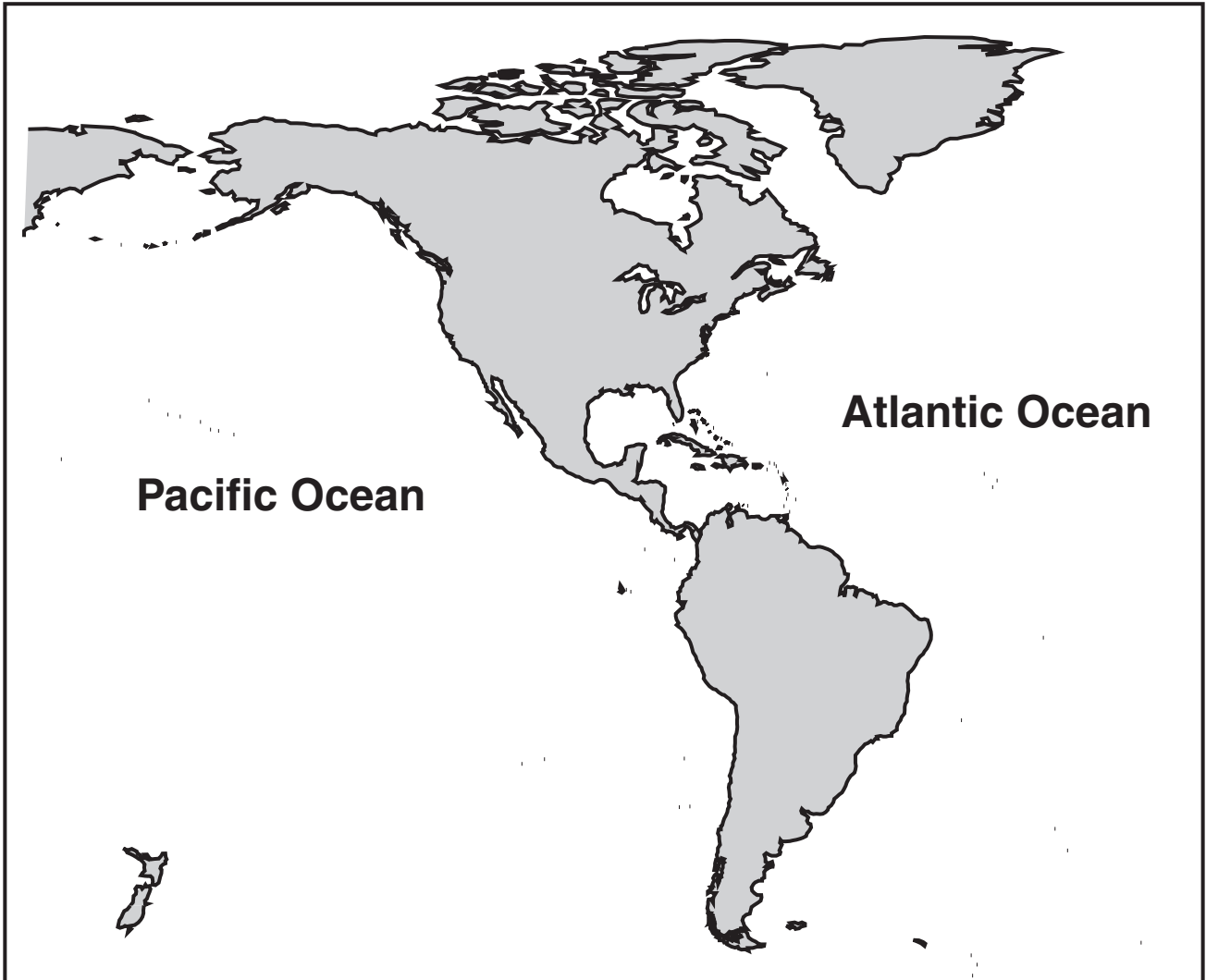
INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is 60.
-  Where you see this icon you will be awarded marks for the quality of written communication in your answer.
- You may use an electronic calculator.
- You are advised to show all the steps in any calculations.

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Answer ALL the questions.

- 1 The map below shows North and South America and the surrounding oceans.



(a) (i) On the map shade and label

- a trench
- a fold mountain chain [2]

(ii) On the map shade and label ONE area of high heat flow. Label this area as A. [1]

(iii) Explain why this area of high heat flow exists.

[1]

(iv) On the map shade and label ONE area of low heat flow. Label this area as B. [1]

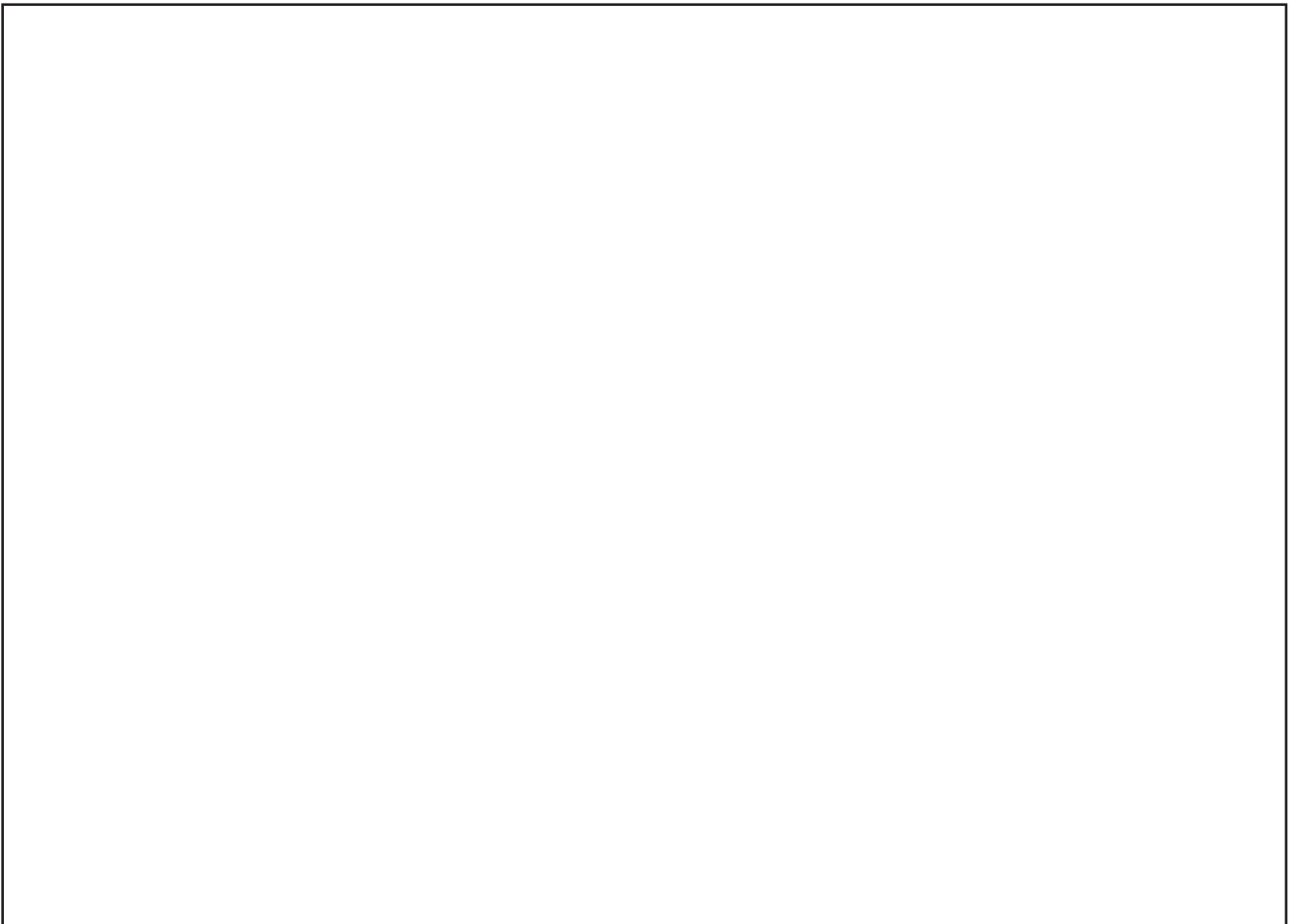
(v) Explain why this area of low heat flow exists.

[1]

(b) (i) In the space below draw a cross-section of a convergent plate margin involving oceanic plates. Add the following labels:

- earthquakes
- volcanoes
- partially melting crust
- convection currents
- island arc

If you can not draw the diagram you may provide a clear description which should include details of labels named above.



[5]

(ii) Explain why earthquakes occur at convergent plate margins.

[2]

(c) Earthquakes are capable of causing huge amounts of damage to the built environment.

Name and describe a method used by engineers to reduce the impact of earthquakes on a built structure.

method _____

description _____

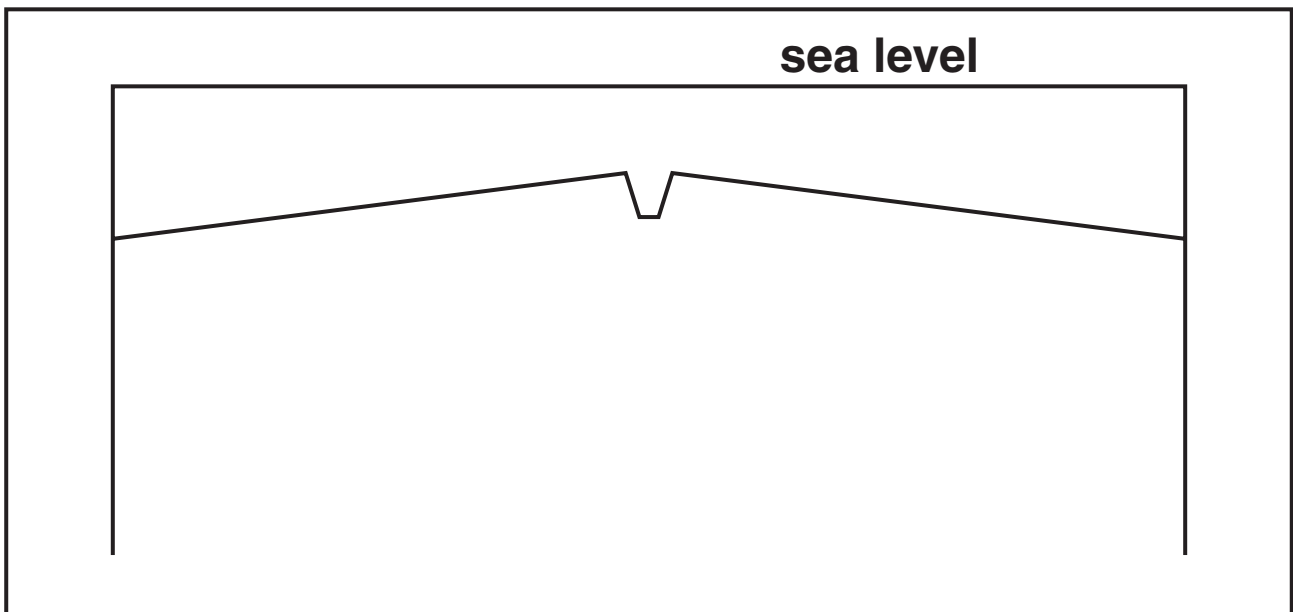
_____ [2]

[Total: 15]

2 (a) (i) The diagram below is a cross-section through a divergent plate margin.

Add the following labelled features to the diagram:

- convection currents
- rising magma
- volcanic activity
- axial rift



[4]

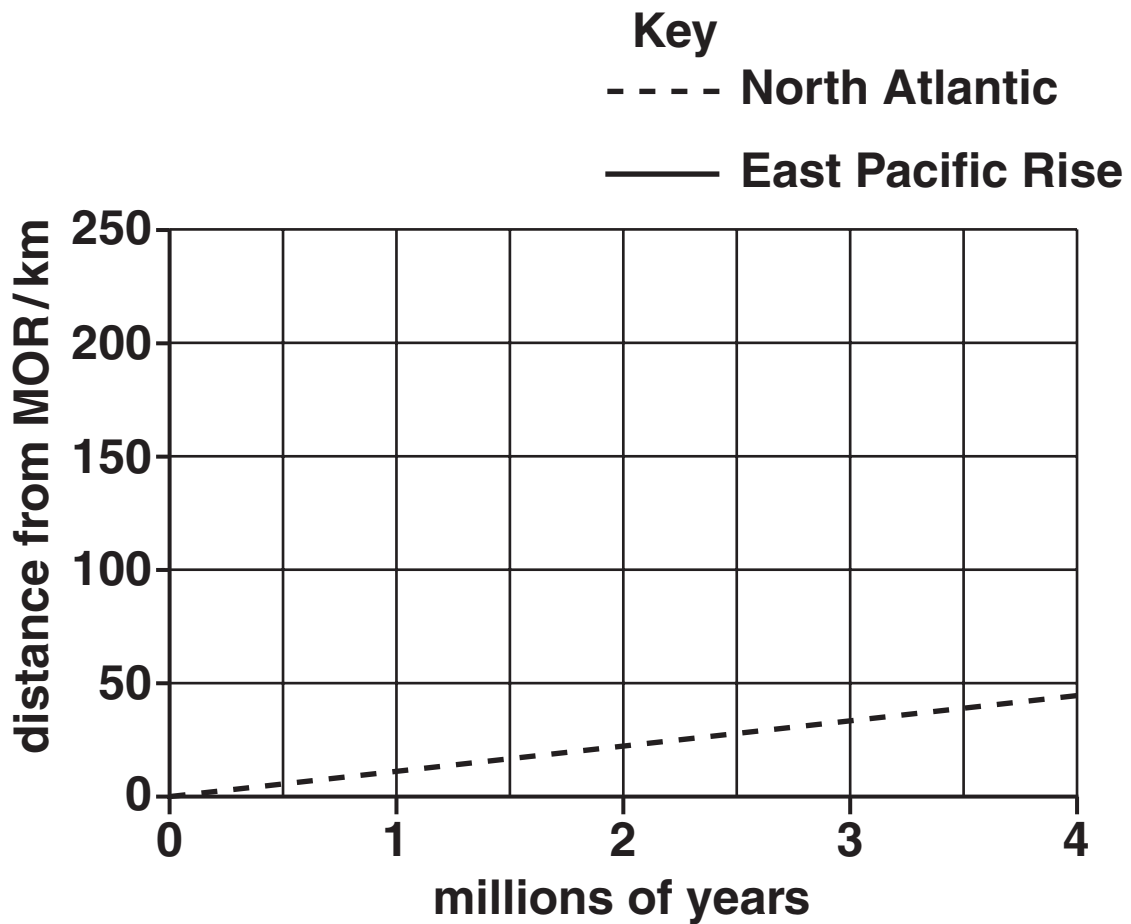
(ii) Describe and explain the possible causes of plate movements at mid-ocean ridges (MORs).

[2]

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QUESTION 2(b) STARTS ON PAGE 10

(b) The graph below can be used to calculate the rate of spreading at the North Atlantic Ridge.



(i) Draw the graph to show spreading at the East Pacific Rise. Use data in the table below. [3]

distance from MOR/km	0	50	100	150	200
millions of years	0	0.8	1.7	2.5	3.4

(ii) Calculate the rate of spreading of the East Pacific Rise. Show your working.

_____ cm/year [2]

(iii) How does the graph show you that the East Pacific Rise is spreading at a faster rate?

_____ [1]

(c) What is the composition of the igneous rocks that comprise the oceanic crust?

 *In your answer, you should use appropriate technical terms, spelled correctly.*

_____ [1]

[Total: 13]

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QUESTION 3 STARTS ON PAGE 13

3 (a) Define the terms *stress* and *strain* in relation to rocks:

stress _____
_____ [1]

strain _____
_____ [1]

(b) When rocks are deformed they behave in a *competent* or *incompetent* manner. Define each term and give an example of a rock that deforms in each way.

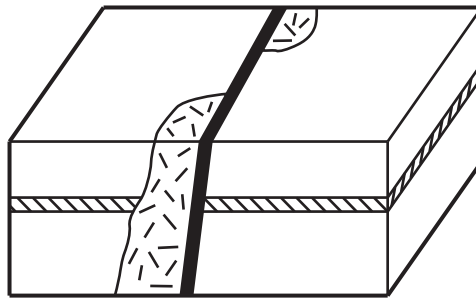
(i) *competent* _____

example _____ [2]

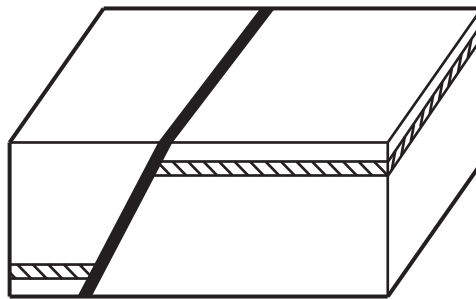
(ii) *incompetent* _____

example _____ [2]

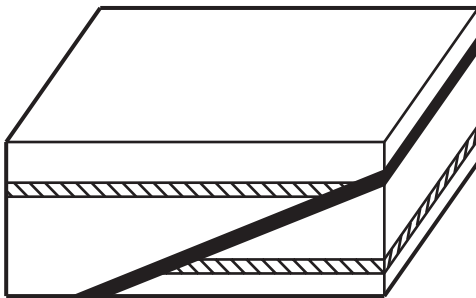
(c) The diagrams below show three types of fault.



C



D



E

(i) Name the fault types C, D and E.

C _____

D _____

E _____ [3]

(ii) Label the footwall on fault D opposite. [1]

(iii) Complete the table below using C, D and E to show the type of stress for each fault type.

stress type	fault (<u>C</u> , <u>D</u> or <u>E</u>)
compression	
shear	
tension	

[2]

(d) Slickensides and fault breccias are two features that can be found along fault planes.

**(i) In the space below draw a labelled diagram to show slickensides.
Explain how they form.**

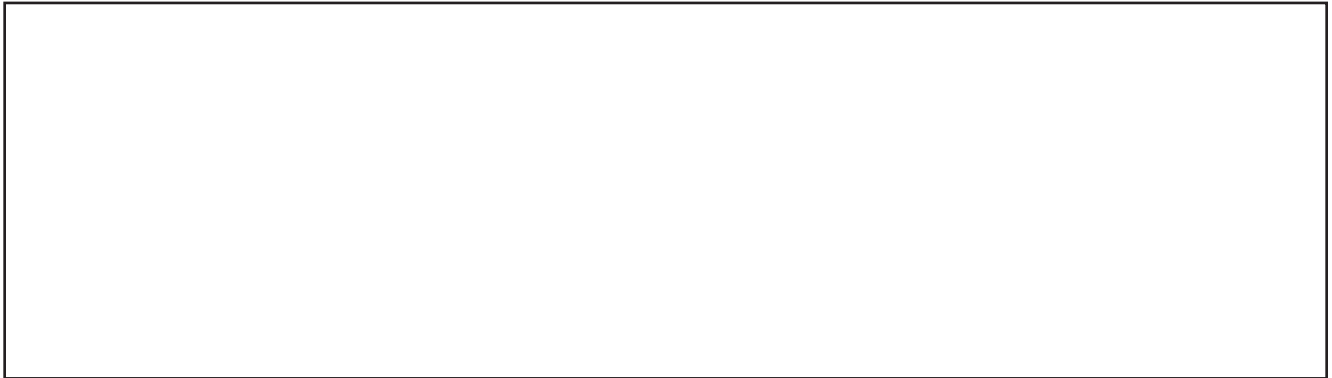
If you can not draw the diagram you may provide a clear description which should include details of labels that you would include on a diagram.



[3]

- (ii) In the space below draw a labelled diagram to show a fault breccia. Explain how it forms.**

If you can not draw the diagram you may provide a clear description which should include details of labels that you would include on a diagram.



[3]

[Total: 18]

- 4 (a) (i) The Sun is made of two main elements. State the names of these two elements.



In your answer, you should use appropriate technical terms, spelled correctly.

element 1 _____

element 2 _____ [2]

- (ii) The Solar System has terrestrial planets (Earth-like), gas giants and smaller bodies. Name TWO terrestrial planets other than the Earth.

terrestrial planet 1 _____

terrestrial planet 2 _____ [2]

- (iii) What properties make these planets Earth-like?

_____ [2]

[Total: 6]

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QUESTION 5 STARTS ON PAGE 20

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